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09/524,140	03/10/2000	Qiming Chen	10991147-1	5742
22879	7590	10/22/2003	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			SHAFFER, ERIC T	
		ART UNIT	PAPER NUMBER	
		3623		

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

	Application No.	Applicant(s)
	09/524,140	CHEN ET AL.
Examiner	Art Unit	
Eric T. Shaffer	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1) Responsive to communication(s) filed on 23 August 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4) Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-25 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on March 10, 2000 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_

4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## **DETAILED ACTION**

1. This communication is in response to the amendments filed August 26, 2003.

### *Summary Of Instant Office Action*

2. Applicant's arguments, filed August 26, 2003, concerning claims 1 – 25 mailed on August 29, 2002 have been considered, deemed unpersuasive and are maintained.
3. None of the claims 1 - 25 have been cancelled or amended. No new claims have been added.

### *Claim Rejections - 35 USC § 101*

4. Claims 1 – 25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

- (1) whether the invention is within the technological arts; and
- (2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e. abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, invoke, use, or advance the technological arts.

In the present case, the method claims of generating multi-dimensional cubes does not specifically use a computer or computer operable medium. Specifically, claims 1 – 7 do not affect, effect, or are affected by technology, and thus do not recite statutory subject matter. Claim 8 mentions a data processing system in the preamble but not in the body of the claim. Dependent claims 9 – 16, which are derived from claim 8, inherit the same deficiency. Claim 17 mentions distributed data processing in the preamble but not in the body of the claim. Claims 18 – 25, which are derived from claim 17, inherit the same deficiency

Although the recited process produces a useful, concrete, and tangible result, since the claimed invention, as a whole and within the body of the claims, is not within the technological arts as explained above, claims 1 – 25 are deemed to be directed to non-statutory subject matter.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Megiddo et al. (US 6,182,070) in view of Castelli et al (US 5,978,788).

7. As per claim 1, Megiddo et al. teaches a method of generating association rules as “a method for determining one or more association rules having a predetermined relationship to a dataset” (column 12, lines 37 – 38) and “the steps of generating a predictive association rule

which indicates how much variance in a support value and a confidence value is expected” (column 12, lines 58 – 59).

The method comprising:

a) receiving a volume cube, with dimensions product, customer, merchant, time and area, that represents the purchase volume of customers; This is taught by Megiddo et al., which recites using “Number of Frequent Items”, which is a count of each individual product, “Number of Customers”, which is a count of each individual customer, the choice of “SuperMarket”, “Dept. Store” or “Mail Order” for merchant, and the “Number of Transactions” as purchase volume (column 11, table 1).

b) generating an association cube, a population cube and a base cube based on the association cube, population cube, and the base cube. Generating a new cube or cubes from an existing cube or cubes is taught by Megiddo et al., which recites “generating one or more synthetic databases from the dataset, each synthetic database containing a plurality of transactions” (column 12, lines 43 – 45).

The association cube, with dimensions product, product2, customer group, merchant, time, area, is taught by Megiddo et al., which recites comparing two product as “if they know that, given a consumer’s purchase of a first set of items (a first itemset), the same consumer can be expected, with some degree of probability, to purchase a particular second set of items (a second set)” (column 1, lines 18 –21), “Number of Customers”, which is a count of each individual customer or a group of customers, the choice of “SuperMarket”, “Dept. Store” or “Mail Order” for merchant, and the “Number of Transactions” as purchase volume (column 11, table 1).

The population cube, with dimensions product, customer group, merchant, time, area, is taught by Megiddo et al., which recites “Number of Frequent Items” as product, “Number of Customers” as customer group, and merchant as the choice of “SuperMarket”, “Dept. Store” or “Mail Order” (column 11, table 1).

The base cube, with dimensions customer group, merchant, time, area, is also taught by Megiddo et al., which recites “Number of Customers” for customer group, and merchant as the choice of “SuperMarket”, “Dept. Store” or “Mail Order” (column 11, table 1).

c) deriving a confidence cube and a support cube of an association rule based on the association cube, population cube and the base cube.

The confidence cube, of dimensions product, product2, customer group, merchant, time, area, and the support cube, of dimensions product, product2, time, time2, group and merchant are taught by Megiddo et al., which recites more than one product as “Items per Transaction”, customer group as “Number of Customers” and merchant as a choice of “SuperMarket”, “Dept. Store” or “Mail Order” (column 11, table 1).

The Megiddo et al patent does not specifically recite the use of time and area as fields in a data cube or table and does not specifically use the terms “cubes” and “multi-dimensional table”.

Castelli et al does in fact teach the concept and the terms “cubes” and “multi-dimensional table” (column 9, lines 51 - 52), teaches generating multiple projections and/or representations from the database” (column 3, lines 2 - 3), that “a database can be converted into an initial data cube” (column 3, line 8) and “generating multi-representations of a data cube” (column 3, line 15). Furthermore, Castelli teaches a database device that incorporates the factors of time and

area as it “contain information on several time and space coordinates” (column 5, lines 9 -10). Castelli uses these specific differences to reduce the error incurred on applying queries and to deliver data in a progressive fashion so as to “provide approximate results at first and more accurate results later, as needed” (column 3, lines 36 - 37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the time and area as dimensions in the synthetic or multi-dimensional database tables is to improve the accuracy of the statistics-based association rules generation method and system. Incorporating time and area as fields or dimensions will increase the granularity of the data analysis, provide more possible explanations to seemingly significant but coincidental correlations in the data relationships, and decrease the number of rules that are assumed to be true but that are, under closer scrutiny, in fact false, which is known as Type II error. This would have the advantage of prevent marketing and promotional resources from being wasted on projects that were assumed to be true but are in fact false. In the same manner, incorporating cubes and multi-dimensional database tables would also have been obvious because the multi-dimensional data table cubes allow the rules results derived by the Megiddo et al. device to be delivered in stages, with approximate results arriving quickly and more accurate results arriving later on as needed. This provides the benefit of gaining an optimal level of speed and accuracy at a given level of operation within the data processing system.

8. As per claim 2, Megiddo et al. teaches a method where generating an association cube, a population cube and a base cube based on the volume cube including the step of generating an association cube that has at least two levels and at least two dimensions. This is taught by Megiddo et al., which recites at least two levels in disclosing the three merchant levels of

“SuperMarket”, “Dept. Store” and “Mail Order” (column 11, table 1). The two dimensions of the association cube is recited by the three types of merchant and the product recited as number of frequent items.

While Megiddo et al. does teach the concepts specified in the claim language, Megiddo et al does not specifically teach the terms “cubes” or “multi-dimensional database”.

9. As per claim 3, Megiddo et al. teaches a method where the step of generating an association cube, a population cube and a base cube based on volume includes the step of generating a scoped association rule; wherein the step of deriving a confidence cube and a support cube of an association rule based on the association cube, population cube, and the base cube includes the step of deriving a confidence cube and a support cube of a scoped association rule based on the association cube, population cube, and the base cube. The scoped association rule is taught by Megiddo et al, which recites “discovering purchasing tendencies of consumer side identifying association rules between itemsets of transactions within a database” (column 14, lines 43 - 44).

10. As per claim 4, Megiddo et al. teaches the method with the step of generating an association cube, a population cube and a base cube based on volume includes the step of generating an association rule with conjoint items cube; wherein the step of deriving a confidence cube and a support cube of an association rule based on the association cube, population cube, and the base cube includes the step of deriving a confidence cube and a support cube of an association rule with conjoint items based on the association cube, population cube,

and the base cube. Conjoint items, or the ability to consider how buyers consider a range of options, is taught by Megiddo et al., which recites three separate options for a choice of merchant in either “SuperMarket”, “Dept. Store” or “Mail Order” (column 11, table 1).

11. As per claim 5, Megiddo et al. teaches the method where the step of generating an association cube, a population cube and a base cube based on volume includes the step of generating a functional association rule cube; wherein the step of deriving a confidence cube and a support cube of an association rule based on the association cube, population cube, and the base cube includes the step of deriving a confidence cube and a support cube of a functional association rule based on the association cube, population cube, and the base cube. The functional association of using variables to perform calculations, which is taught by Megiddo et al., which recites “Number of Frequent Itemsets” and “Number of Frequent Items”, which when multiplied together, produce the product Number of Hypotheses (column 9, lines 68 - 69).

12. As per claim 6, Megiddo et al. teaches the method wherein steps of receiving, generating and deriving using On Line Analytical Processing programming. Receiving is taught by Megiddo et al., which recites “Among other things, the interface functions as an input mechanism for establishing certain variables, including a minimum confidence and support value and the other redetermined/user-defined input parameters disclosed below” (column 6, lines 48 - 52). Generating is taught by Megiddo et al., which recites on-line transactions being used to generate rules as “one or more association rules mined from a database is provided which generates one or more synthetic databases from the dataset, each synthetic database containing a

plurality of transactions, each transaction including one or more items, wherein the occurrences of all items in each synthetic database are independent" (column 4, lines 56 - 61). Derriving is taught by Megiddo et al., which recites "the original data from which the association rules have been derived" (column , lines 3 - 4).

13. As per claim 7, Megiddo et al. teaches the method of claim 1 where step (a) includes the steps of:

Receiving a first volume cube that represents the purchase volume of customers for a first region, receiving a second volume cube that represents the purchase volume of customers for a second region, where step (b) includes the step of generating an association cube, a population cube and a base cube based on the first volume cube and the second volume cube.

This is taught by Megiddo et al., which recites the volume, association, population and base cubes as discussed in the analysis of claim 1.

The Megiddo et al patent does not specifically mention the use of regions as fields in a data cube or table. It is notoriously well known to one skilled in the art of computer software development to incorporate dimensions that encompasses regions in the cube data tables because the sales volume of many products varies according to which region of the country said product is marketed in. Some products sell better in the south, while others sell better in the north or on the west coast.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include region as a dimension in the synthetic database tables is to improve the accuracy of the statistics-based association rules generation method and system. Incorporating regions as fields or dimensions will increase the granularity of the data analysis, provide more

possible explanations to seemingly significant but coincidental correlations in the data relationships, and decrease the number of rules that are assumed to be true but that are, under closer scrutiny, in fact false, which is known as Type II error. Incorporating regions would prevent marketing resources from being wasted in regions a product would not sell well in and allow said resources to be more effectively used elsewhere.

14. As per claim 8, 9, 17 and 18, Megiddo et al. teaches the system and method where each LDOS comprises a local data warehouse and at least one local OLAP server, with the local data warehouse being adapted to receive and store said transaction data. This is taught by Megiddo et al., which recites “means for generating one or more synthetic databases from the dataset, each synthetic database containing a plurality of transactions, each transaction containing one or more items” (column 13, line 52 - 55).

Wherein the local computation engine builds the local profile cubes that contains at least partial information regarding customer profiling by periodically mining new transactions flowing into said local data warehouse and deriving patterns for local analysis, said local computation engine also being adapted to incrementally update said local profile cubes. This is taught by Megiddo et al., which recites “a method for data mining which may include the statistical significance determining process in accordance with the invention. The method starts at step 102 in which a database is processed (mined) to discover any association rules” (column 9, lines 60 – 64).

The Megiddo et al patent does not specifically mention the use of kind as a field in a profile cube. It is notoriously well known in the art of computer software development to

incorporate dimensions that encompasses kind into the profile cube data tables because kind, which consists of sales volume generated by sales events, coupons and discounts is used to break out sales data and determine which part of the sales volume is being achieved by targeting customers with premium offers and which part of sales volume is being achieved by customers paying full price.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include kind as dimensions in the synthetic database tables is to improve the accuracy of the statistics-based association rules generation method and system. Incorporating kind as a field or dimensions will increase the granularity of the data analysis, and allow rules to be generated go beyond merely knowing that, in general, a promotion is effective. Using kind will empower the user to actually identify which specific promotional item or event is the most and least effective at increasing sales volume. This will have the benefit of saving money by avoiding sponsoring ineffective sales events and more appropriately channeling these funds into the most cost effective sales events.

The Megiddo et al patent does not specifically recite the use of time and area as fields in a data cube or table and does not specifically use the terms “cubes” and “multi-dimensional table”.

Castelli et al does in fact teach the concept and the terms “cubes” and “multi-dimensional table” (column 9, lines 51 - 52), teaches generating multiple projections and/or representations from the database” (column 3, lines 2 - 3), that “a database can be converted into an initial data cube” (column 3, line 8) and “generating multi-representations of a data cube” (column 3, line 15). Furthermore, Castelli teaches a database device that incorporates the factors of time and

area as it “contain information on several time and space coordinates” (column 5, lines 9 -10). Castelli uses these specific differences to reduce the error incurred on applying queries and to deliver data in a progressive fashion so as to “provide approximate results at first and more accurate results later, as needed” (column 3, lines 36 - 37).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to incorporate cubes and multi-dimensional database into the rules results derived by the Megiddo et al. device because this would allow results to be delivered in stages, with approximate results arriving quickly and more accurate results arriving later on as needed. This provides the benefit of gaining an optimal level of speed and accuracy at a given level of operation within the data processing system.

15. As per claims 10 and 19, Megiddo et al. teaches the system and the claim 18 method where a local data warehouse receives and stores transaction data in a first predetermined interval and wherein said local OLAP engine generates said local profile cubes in a second predetermined interval. This is taught by Megiddo et al., which recites “after executing the steps described below, the identifier kernel outputs protective rules” (column 5, lines 37 - 39). In the Megiddo device, the interval is defined as the time it takes to execute a specific number of steps.

16. As per claims 11 and 20, Megiddo et al. teaches the system and the claim 18 method where GDOS comprises a global data warehouse and at least one global OLAP server,

The global data warehouse for receiving and storing the local profile cubes. This is taught by Megiddo et al., which recites “means for generating one or more synthetic databases from the dataset, each database containing a plurality of transactions” (column 14, lines 23 - 25).

The global computation engine for combining summary information from each of said LDOS to build and incrementally update said global profile cubes and association rules, and for providing feedback to said plurality of LDOS. This is also taught by Megiddo et al., which recites “means for generating one or more synthetic databases from the dataset” (column 14, lines 23 - 24).

17. As per claims 12 and 21, Megiddo et al. teaches the system and method where said local and global profile cubes comprise information of a plurality of customers, said information being derived from transaction data with said customers as stored by said local and global data warehouses, said profiling information specifying at least the following: kind, product, customer, merchant, time and area. This is taught by Megiddo et al., which recites “a computer-based system for discovering purchasing tendencies of consumers by identifying association rules between itemsets of transactions is provided in which the computer-based system discovers association rules in a dataset and generates one or more synthetic databases from the dataset, each synthetic database containing a plurality of transactions wherein the occurrences of all items are independent” (column 5, lines 5 - 20).

18. As per claims 13 and 22, Megiddo et al. teaches the system and method where said local profile cubes are maintained at LDOS and said global profile cubes are maintained at GDOS,

each of said local profile cubes being populated by mapping values in transaction data records into each dimension of said profile cube, each of said global profile cubes being retrieved and updated by merging appropriate local profile cubes. This is taught by Megiddo et al., which recites “all of the combinations of items are found which have a transaction support above the minimum user-defined support and these combinations of items are called frequent itemsets.

Next, the frequent itemsets are used to generate desired association rules” (column 2, lines 47 - 52).

19. As per claims 14 and 23, Megiddo et al. teaches the method and the system where said profile cubes are used to derive a plurality of shopping pattern cubes, said shopping pattern cubes comprising,

Shopping behavior of at least one customer. This is taught by Megiddo et al., which recites the ability to break out data by “Number of Customers” (column 11, table 1).

Shopping patterns based on probability distribution; This is taught by Megiddo et al., which recites “means for ranking the identified association rules based on the determined likelihood in order to identify association rules which have a predetermined relationship to the dataset” (column 13, lines 64 - 66) and “The p-value of a test result is the probability of obtaining an outcome as least as extreme as the outcome actually observed assuming that the null hypothesis is true” (column 7, lines 33 - 35).

Shopping patterns based on volume; This is taught by Megiddo et al., which recites determining patterns based on “Number of Transactions” and “Number of Frequent Items” (column 12, table 1).

20. As per claims 15 and 24, Megiddo et al. teaches the system and method where association rules comprise scoped association rules with different bases, each of the bases being said scoped association rule's population over which said scoped association rules is defined; This is taught by Megiddo et al., which recites "computer usable code means also discovers a plurality of association rules by analyzing the transactions having a similar probability threshold value for each synthetic database" (column 4, lines 25 – 28).

Multidimensional association rules with "customer" being its base, "products" being its item, and "merchant", "area" and "time" being underlying features of said multidimensional association rules; This is taught by Megiddo et al., which recites "Number of Frequent Items", and "SuperMarket", "Dept. Store" and "Mail Order" as merchants (column 11, table 1).

Multilevel association rules with its features being represented at multiple levels. This is taught by Megiddo et al., which recites "the database comprises one or more transactions, wherein each transaction contains one or more items" (column 3, lines 65 - 67).

The Megiddo et al patent does not specifically recite the use of "area" and "time" as fields being underlying features of said multidimensional association rules. However, it is notoriously well known in the art of computer software development to incorporate dimensions that encompasses time into the cube data tables because sales for many products are seasonal, with sales increasing or decreasing based on season of year, month, or proximity to Christmas or other holidays. Sales of products may also vary with time of month or day of the week.

It also is well known to incorporate area or region because the sales volume of many products varies according to which area of the country said product is marketed in. Some

products sell better in the south, while others sell better in the north or on the west coast.

Similarly, some products sell greater volumes in the city, while others sell more in the country.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include time and area as dimensions in the synthetic database tables is to improve the accuracy of the statistics-based association rules generation method and system.

Incorporating time and area as fields or dimensions will increase the granularity of the data analysis, provide more possible explanations to seemingly significant but coincidental correlations in the data relationships, and decrease the number of rules that are assumed to be true but that are, under closer scrutiny, in fact false, which is known as Type II error. This would have the advantage of prevent marketing and promotional resources from being wasted on projects that were assumed to be true but are in fact false.

21. As per claims 16 and 25, Megiddo et al. teaches the system and method where association rules are mined by:

Converting a volume cube into an association cube, a base cube and a population cube, said volume cube representing purchase volumes of customers dimensioned by item, base and feature; The purchase volumes are taught by Megiddo et al., which recites “Number of Transactions” (column 11, table 1).

Deriving a support cube based on said base cube and said association cube; and

Deriving a confidence cube based on said base cube and said association cube;

This is taught by Megiddo et al., which recites “generating one or more synthetic databases from the dataset, each dataset containing a plurality of transactions, the occurrence of all items in each synthetic database being independent”(column 12, lines 43 - 45).

A support cube, with dimensions customer, product, group, merchant, time, time2 and area, is taught by Megiddo et al., which recites “Number of Customers” for customer, “Number of Frequent Items” for product, “Number of Frequent Itemsets” for group, and “SuperMarket, Department Store and Mail Order” for merchant (column 11, table 1).

***Response to Arguments***

22. Applicant’s arguments filed August 26, 2003 have been fully considered, but the same are not persuasive.

- a) Applicant argues that the synthetic database taught by Megiddo does not teach or suggest the use of data cubes. However, the Castelli et al reference does in fact teach “generating multi-representations of a data cube” (column 3, line 15).
- b) Applicant argues that the synthetic database taught by Megiddo does not teach or suggest use of a multi-dimensional database. However, the Castelli et al reference does in fact teach “wherein the data cube is a multi-dimensional table” (column 9, lines 51 - 52).

In light of the above stated facts, examiner respectfully states that applicant’s arguments have been fully considered, deemed unpersuasive, and the rejections under the prior Office Action, mailed August 29, 2003 are maintained.

***Conclusion***

23. No claims were allowed and all claims were rejected.

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rastogi et al. (US 5,946,683) – Instation of attribute in association rules  
Malloy et al. (US 5,978,796) – Multi-dimentional database mapping  
Morimoto et al. (US 5,983,222) – Computing of association rules  
Agrawal et al. (US 6,061,682) – Mining association rules  
Guha et al. (US 6,049,797) – Database clustering  
DBLab Meetings - Page 12, "Data Cube: Its Implementation and Application in Data Mining" June 26, 1997.  
"High Performance Data Mining Using DataCubes On Parallel Computers", Northwestern University, 1997.

25. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Shaffer whose telephone number is (703) 305-5283. The Examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (703) 305-9643.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington D.C. 20231

Or faxed to:

(703) 746-7238 [After Final communications, labeled "Box AF"]  
(703) 746-7239 [Official communications]  
(703) 706-9124 [Informal/Draft communications, labeled  
"PROPOSED" or "DRAFT"]

Hand delivered responses should be brought to Crystal Park 5, 2121 Crystal Drive, Arlington, VA, 7<sup>th</sup> floor receptionist.

ETS  
October 10, 2003

*Susanna Diaz*  
*Susanna Diaz*  
*Primary Examiner*  
*A.U. 3623*